DOCKET SECTION

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268

Postal Rate and Fee Changes, 1997	)	Docket No. R97-1

RESPONSE OF THE RECORDING INDUSTRY ASSOCIATION OF AMERICA et al. WITNESS ANDREW TO INTERROGATORIES OF UNITED STATES POSTAL SERVICE (USPS/RIAA et al.-T1-1-6)

The Recording Industry Association of America ("RIAA") hereby provides the responses of witness Gary M. Andrew to the following interrogatories of the United States Postal Service, filed on January 14, 1998: USPS/RIAA-T-1-6.

The interrogatories are stated verbatim and followed by the responses.

Respectfully submitted,

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January 22, 1998

RESPONSE OF RECORDING INDUSTRY ASSOCIATION OF AMERICA, ET AL. WITNESS ANDREW TO INTERROGATORIES OF THE UNITED STATES POSTAL SERVICE

USPS/RIAA et al.-T1-1

On page 23 of your testimony, you discuss the physics of granular materials. Please provide a dictionary definition of the term "granular" and "granule".

RESPONSE

granule: a small particle; esp: one of numerous particles forming a larger unit.

granular: consisting of or appearing to consist of granules.

Merriam-Webster Dictionary 1975

USPS/RIAA et al.-T1-2

Please refer to the scientific articles regarding physics of granular materials provided in Library Reference RIAA-LR-1.

a. Please confirm that the focus of investigation by Duran, et. al. was on disks and/or beads. If not confirmed, please explain.

b. Please confirm that the MRI observations by Ehrichs, et. al. were on convection in a column of poppy seeds. If not confirmed, please explain.

c. Please confirm that the experimental observations discussed by Jager, Nagel and Behringer included pyrex spheres, poppyseeds, sand and brass spheres. If not confirmed, please explain.

d. Please confirm that the experimental observations reported by Jaeger and Nagel in "Physics of the Granular State" concerned sandpiles, cereals, and disks. If not confirmed, please explain.

e. Please confirm that the model developed by Jullien and Meakin used spheres. If not confirmed, please explain.

f. Please confirm that the experimental observations of Knight, et. al. used glass beads. If not confirmed, please explain.

g. Please confirm that the simulation by Rosato, et. al. was based on disks. If not confirmed, please explain.

h. Do you have any reason to doubt the veracity of Jaeger and Nagel's statement (p. 1524) that "...flow characteristics of granular material are determined by the geometrical packing of constituent particles."? If so, please explain fully.

i. Do you have any reason to doubt the veracity of Jaeger and Nagel's statement (p. 1527) that "[f]aceted grains are much more likely to interlock."?

RESPONSE

a. Confirmed.

b. Confirmed.

c. Confirmed.

d. Not confirmed. The correct spelling of the lead author is Jaeger. The paper is a survey of several articles and includes experiments with the objects listed as well as other work in the field.

e. Confirmed with the understanding that this was a computer simulation and the physical objects were not actually observed.

f. Confirmed.

g. Confirmed with the understanding that this was a computer simulation and the physical objects were not actually observed.

h. No.

i. The passage to which the question refers is misquoted. The statement by Jaeger and Nagel is as follows: "Because faceted grains are more likely to interlock than smooth ones, it is plausible that a minimum fraction of rough material is required to bridge the flow region and start a propagating front."

I have no reason to doubt the veracity of any of the material presented on page 1527.

USPS/RIAA et al.-T1-3

Are you a physicist? Please provide evidence on any degrees, honorary or otherwise, conferred upon you in the field of physics.

RESPONSE

No.

USPS/RIAA et al.-T1-4

In the field of granular physics, how many articles, authored or coauthored by you, have been published in scientific journals? Please provide copies of all such articles.

RESPONSE

None.

USPS/RIAA et al.-T1-5

Are you aware of any studies or experimental observations of the flow characteristics, convection or trapping which occurs when faceted objects of a size and shape similar to those found in the mailstream are subjected to vibrations similar to those normally supplied by

transportation and handling of mail containers? If so, please provide complete documentation of those studies or experiments.

RESPONSE

My personal experience with loose, heterogeneous materials in containers is such that as a trained and experienced practitioner of statistical sampling, I know that pieces selected from the top of such a container cannot be assumed to be a random sample of the entire container.

USPS/RIAA et al.-T1-6

Please provide your understanding of the term "convection" that you use on page 23 of your testimony.

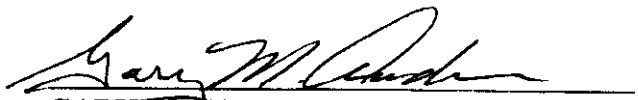
RESPONSE

A description of the convection phenomenon appears in the article by Knight, et al. ("Vibration-Induced Size Separation in Granular Media: The Convection Connection") on page 3729, beginning on line 13 of the lefthand column, including Figure 2.

The friction of the loose objects with the sides of the container causes these objects to have a downward flow. The objects near the middle vertical column of the container have an upward flow. However, larger objects tend to get trapped when they reach the top of the cycle and do not continue the downward flow with the smaller objects.

DECLARATION

I, Gary M. Andrew, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information, and belief.



GARY M. ANDREW

Dated: 1-21-98

CERTIFICATE OF SERVICE

I hereby certify that I have on this date served this document upon all participants of record in this proceeding in accordance with section 12 of the rules of practice.

N. Frank Wiggins

DATE: January 22, 1998